**WHAT IS CLAIMED IS:**

1. An isolated polynucleotide having a nucleotide sequence of a *Chlamydia trachomatis* genome, comprising

(a) the nucleotide sequence of SEQ ID No. 1;

(b) the nucleotide sequence contained within the *Chlamydia trachomatis* genomic DNA in ECACC Deposit No. 98112618;

(c) the nucleotide sequence contained in a clone insert in ECACC Deposit No. 98112617;

(d) a nucleotide sequence exhibiting at least 99.9% identity with the sequence of SEQ ID No. 1; or

(e) a nucleotide sequence exhibiting at least 80% homology to SEQ ID No. 1.

2. An isolated polynucleotide which hybridizes to SEQ ID No. 1 or to the *Chlamydia trachomatis* genomic DNA contained in ECACC Deposit No. 98112618 or to a clone insert in ECACC Deposit No. 98112617 under conditions of high stringency .

3. An isolated polynucleotide which hybridizes to SEQ ID No. 1 or to the *Chlamydia trachomatis* genomic DNA contained in ECACC Deposit No. 98112618 under conditions of intermediate stringency.

4. An isolated polynucleotide having a nucleotide sequence of an open reading frame (ORF) of a *Chlamydia trachomatis* genome, comprising:

(a) a nucleotide sequence chosen from one of ORF2 to ORF 1197;

(b) a nucleotide sequence exhibiting at least 99.9% identity with one of ORF2 to ORF 1197; or

(c) a nucleotide sequence exhibiting at least 80% homology to one of ORF2 to ORF 1197.

5. An isolated polynucleotide which hybridizes to one of ORF2 to ORF 1197 under conditions of high stringency.

6. An isolated polynucleotide which hybridizes to one of ORF2 to ORF 1197 under conditions of intermediate stringency.

7. The polynucleotide of Claim 2, 3, 4, 5, or 6 which encodes the following polypeptides or fragments thereof:

(a) a *Chlamydia trachomatis* transmembrane polypeptide having between 1 and 3 transmembrane domains;

(b) a *Chlamydia trachomatis* transmembrane polypeptide having between 4 and 6 transmembrane domains;

(c) a *Chlamydia trachomatis* transmembrane polypeptide having at least 7 transmembrane domains;

(d) a *Chlamydia trachomatis* polypeptide involved in intermediate metabolism of sugars and/or cofactors;

(e) a *Chlamydia trachomatis* polypeptide involved in intermediate metabolism of nucleotides or nucleic acids;

(f) a *Chlamydia trachomatis* polypeptide involved in metabolism of amino acids or polypeptides;

(g) a *Chlamydia trachomatis* polypeptide having involved in metabolism of fatty acids;

(h) a *Chlamydia trachomatis* polypeptide involved in the synthesis of the cell wall;

(i) a *Chlamydia trachomatis* polypeptide involved in transcription, translation, and/or maturation process;

(j) a *Chlamydia trachomatis* transport polypeptide;

(k) a *Chlamydia trachomatis* polypeptide involved in the virulence process;

(l) a *Chlamydia trachomatis* polypeptide involved in the secretory system and/or which is secreted;

(m) a *Chlamydia trachomatis* polypeptide of the cellular envelope or outer cellular envelope of *Chlamydia trachomatis*.

(n) a *Chlamydia trachomatis* surface exposed polypeptide;

(o) a *Chlamydia trachomatis* lipoprotein;

(p) a *Chlamydia trachomatis* polypeptide involved in lipopolysaccharide biosynthesis;

(q) a *Chlamydia trachomatis* KDO-related polypeptide;

(r) a *Chlamydia trachomatis* phosphomannomutase-related polypeptide;

(s) a *Chlamydia trachomatis* phosphoglucomutase-related polypeptide;

(t) a *Chlamydia trachomatis* lipid A component-related polypeptide;

(u) a *Chlamydia trachomatis* polypeptide that contains an RGD sequence;

(v) a *Chlamydia trachomatis* Type III secreted polypeptide;

(w) a *Chlamydia trachomatis* cell wall anchored surface polypeptide; or

(x) a *Chlamydia trachomatis* polypeptide that is not found in *Chlamydia trachomatis*.

8. A polynucleotide encoding a fusion protein, comprising one of ORF2 to ORF 1197 of Claim 4, 5, or 6 ligated in frame to a polynucleotide encoding a heterologous polypeptide.

9. A recombinant vector that contains the polynucleotide of Claim 1, 2, 3, 4, 5 or 6.

10. A recombinant vector that contains the polynucleotide of Claim 8.

11. A recombinant vector that contains the polynucleotide of Claim 4, 5 or 6, operatively associated with a regulatory sequence that controls gene expression.

12. A recombinant vector that contains the polynucleotide of Claim 8 operatively associated with a regulatory sequence that controls gene expression.

13. A genetically engineered host cell that contains the polynucleotide of Claim 1, 2, 3, 4, 5 or 6.

14. A genetically engineered host cell that contains the polynucleotide of Claim 8.

15. A genetically engineered host cell that contains the polynucleotide of Claim 4, 5 or 6 operatively associated with a regulatory sequence that controls gene expression in the host cell.

16. A genetically engineered host cell that contains the polynucleotide of Claim 8 operatively associated with a regulatory sequence that controls gene expression in the host cell.

17. A method for producing a polypeptide, comprising:

(a) culturing the genetically engineered host cell of Claim 15 under conditions suitable to produce the polypeptide encoded by the polynucleotide; and

(b) recovering the polypeptide from the culture.

18. A method for producing a fusion protein, comprising:

(a) culturing the genetically engineered host cell of Claim 16 under conditions suitable to produce the fusion protein encoded by the polynucleotide; and

(b) recovering the fusion protein from the culture.

19. A polypeptide encoded by the polynucleotide of Claim 4, 5 or 6.

20. The polypeptide of Claim 19 which immunoreacts with seropositive serum of an individual infected with *Chlamydia trachomatis*.

21. The polypeptide of Claim 19 which comprises the following polypeptides or fragments thereof:

(a) a *Chlamydia trachomatis* transmembrane polypeptide having between 1 and 3 transmembrane domains;

(b) a *Chlamydia trachomatis* transmembrane polypeptide having between 4 and 6 transmembrane domains;

(c) a *Chlamydia trachomatis* transmembrane polypeptide having at least 7 transmembrane domains;

(d) a *Chlamydia trachomatis* polypeptide involved in intermediate metabolism of sugars and/or cofactors;

(e) a *Chlamydia trachomatis* polypeptide involved in intermediate metabolism of nucleotides or nucleic acids;

(f) a *Chlamydia trachomatis* polypeptide involved in metabolism of amino acids or polypeptides;

(g) a *Chlamydia trachomatis* polypeptide involved in metabolism of fatty acids;

(h) a *Chlamydia trachomatis* polypeptide involved in the synthesis of the cell wall;

(i) a *Chlamydia trachomatis* polypeptide involved in transcription, translation, and/or maturation process;

(j) a *Chlamydia trachomatis* transport polypeptide;

(k) a *Chlamydia trachomatis* polypeptide involved in the virulence process;

(l) a *Chlamydia trachomatis* polypeptide involved in the secretory system and/or which is secreted;

(m) a *Chlamydia trachomatis* polypeptide of the cellular envelope or outer cellular envelope of *Chlamydia trachomatis*.

(n) a *Chlamydia trachomatis* surface exposed polypeptide;

(o) a *Chlamydia trachomatis* lipoprotein;

(p) a *Chlamydia trachomatis* polypeptide involved in lipopolysaccharide biosynthesis;

(q) a *Chlamydia trachomatis* KDO-related polypeptide;

(r) a *Chlamydia trachomatis* phosphomannomutase-related polypeptide;

(s) a *Chlamydia trachomatis* phosphoglucomutase-related polypeptide;

(t) a *Chlamydia trachomatis* lipid A component-related polypeptide;

(u) a *Chlamydia trachomatis* polypeptide that contains an RGD sequence;

(v) a *Chlamydia trachomatis* Type III secreted polypeptide;

(w) a *Chlamydia trachomatis* cell wall anchored surface polypeptide; or

(x) a *Chlamydia trachomatis* polypeptide that is not found in *Chlamydia trachomatis*.

22. A fusion protein encoded by the polynucleotide of Claim 8.

23. The fusion protein of Claim 22 which immunoreacts with seropositive serum of an individual infected with *Chlamydia trachomatis*.

24. An antibody that immunospecifically binds to the polypeptide of Claim 19.

25. An antibody that immunospecifically binds to the fusion protein of Claim 22.

26. A method for the detection and/or identification of *Chlamydia trachomatis* in a biological sample, comprising:

(a) contacting the sample with a polynucleotide primer of Claim 1, 2, 3, 4, 5, or 6 in the presence of a polymerase enzyme and nucleotides under conditions which permit primer extension; and

(b) detecting the presence of primer extension products in the sample in which the detection of primer extension products indicates the presence of *Chlamydia trachomatis* in the sample.

27. A method for the detection and/or identification of *Chlamydia trachomatis* in a biological sample, comprising:

(a) contacting the sample with a polynucleotide probe of Claim 1, 2, 3, 4, 5, or 6 under conditions which permit hybridization of complementary base pairs; and

(b) detecting the presence of hybridization complexes in the sample in which the detection of hybridization complexes indicates the presence of *Chlamydia trachomatis* in the sample.

28. A method for the detection and/or identification of *Chlamydia trachomatis* in a biological sample, comprising:

(a) contacting the sample with the antibody of Claim 24 under conditions suitable for the formation of immune complexes; and

(b) detecting the presence of immune complexes in the sample, in which the detection of immune complexes indicates the presence of *Chlamydia trachomatis* in the sample.

29. A method for the detection and/or identification of antibodies to *Chlamydia trachomatis* in a biological sample, comprising:

(a) contacting the sample with a polypeptide of Claim 19 under conditions suitable for the formation of immune complexes; and

(b) detecting the presence of immune complexes in the sample, in which the detection of immune complexes indicates the presence of *Chlamydia trachomatis* in the sample.

30. A DNA chip containing an array of polynucleotides comprising at least one of the polynucleotides of Claim 1, 2, 3, 4, 5, or 6.

31. A protein chip containing an array of polypeptides comprising at least one of the polypeptides of Claim 19.

32. An immunogenic composition comprising the polypeptide of Claim 19 and a pharmaceutically acceptable carrier.

33. An immunogeneic composition comprising the polypeptide of Claim 20 and a pharmaceutically acceptable carrier.

34. An immunogenic composition comprising the fusion protein of Claim 22 and a pharmaceutically acceptable carrier.

35. An immunogenic composition comprising the fusion protein of Claim 23 and a pharmaceutically acceptable carrier.

36. A pharmaceutical composition comprising the polypeptide of Claim 19 and a pharmaceutically acceptable carrier.

37. A pharmaceutical composition comprising the polypeptide of Claim 20 and a pharmaceutically acceptable carrier.

38. A pharmaceutical composition comprising the polypeptide of Claim 22 and a pharmaceutically acceptable carrier.

39. A pharmaceutical composition comprising the polypeptide of Claim 23 and a pharmaceutically acceptable carrier.

40. A method of immunizing against *Chlamydia trachomatis*, comprising: administering to a host an immunizing amount of the immunogenic composition of Claim 32.

41. A method of immunizing against *Chlamydia trachomatis*, comprising: administering to a host an immunizing amount of the immunogenic composition of Claim 33.

42. A method of immunizing against *Chlamydia trachomatis*, comprising administering to a host an immunizing amount of the immunogenic composition of Claim 34.

43. A method of immunizing against *Chlamydia trachomatis*, comprising: administering to a host an immunizing amount of the immunogenic composition of Claim 35.

44. A DNA immunogenic composition comprising the expression vector of Claim 11.

45. The DNA composition of Claim 44, wherein the DNA composition directs the expression of a neutralizing epitope of *Chlamydia trachomatis.*

46. A DNA immunogenic composition comprising the expression vector of Claim 12.

47. The DNA composition of Claim 46, wherein the DNA composition directs the expression of a neutralizing epitope of *Chlamydia trachomatis.*

48. A screening assay, comprising:

(a) contacting a test compound with an isolated polynucleotide of Claim 1, 2, 3, 4, 5 or 6; and

(b) detecting whether binding occurs.

49. A screening assay, comprising:

(a) contacting a test compound with the polypeptide of Claim 19; and

(b) detecting whether binding occurs.

50. A screening assay, comprising:

(a) contacting a test compound with the polypeptide of Claim 22; and

(b) detecting whether binding occurs.

51. A kit comprising a container containing an isolated polynucleotide of Claim 1, 2, 3, 4, 5 or 6.

52. The kit of Claim 51 wherein the polynucleotide is a primer or a probe.

53. The kit of Claim 51 wherein the polynucleotide is a primer and the kit further comprises a container containing a polymerase.

54. The kit of Claim 51 which further comprises a container containing deoxynucleotide triphosphates.

55. A kit comprising a container containing an antibody that immunospecifically binds to the polypeptide of Claim 19.

56. A kit comprising a container containing an antibody that immunospecifically binds to the fusion protein of Claim 22.

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